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				Elwin M. BEATY	l et al.			
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sce	Α	US 5245671	Sept. 1993	Kobayashi et al.	382	150		
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Substitute fo	or form 1449A	VPTO	·	Complet	e if Known	
				Application Number	09/844626	
INFO	RMATION	N DISCLO	SURE	Filing Date	4/27/2001	
STA	STATEMENT BY APPLICANT			First Named Inventor	BEATY et al.	
. (use	as many she	eets as neces	ssary)	Art Unit	2877	
				Examiner Name		
Sheet	1	of	1	Attorney Docket Number	60012US	

			U.S. PATE	NT DOCUMENTS		
Examiner	Cite	Document Number	Publication Date	Name of Patentee or	Pages, Columns, Lines, Where	
Initials*	No.1	Number - Kind Code ² (if known)	MMOON		Applicant of Cited Document	Relevant Passages or Relevant Figures Appear
Sce		US-5,440,391	08/08/1995	SMEYERS	- Sansippen	
		US-5,909,285	06/01/1999	BEATY		
		US-6,055,054	04/25/2000	BEATY	RECEIVED	
		US-6,064,756	05/16/2000	BEATY	- HECEIVEL	
-		US-6,064,757	05/16/2000	BEATY	11111 1 . 0000	
Sa		US-6,072,898	06/06/2000	BEATY	JUN 1 7 2003	
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Examiner Initials*	Cite No.	Document Number Number - Kind Code ² (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
SUL		US-5,039,868	08/13/1991	Kobayashi	FIG. 4, Col. 7, L. 12 etc.
		US-5,455,870	10/03/1995	Sepai	FIG. 1, Col. 6, L. 12 etc.
		US-5,574,801	11/12/1996	Collet-Beillon	FIGS. 4, 8, 9 Col. 7, L. 3
- \ I		US-6,005,965	12/21/1999	Tsuda et al.	FIGS. 1-8, Col. 1
1		US-5,828,449	10/27/1998	King	FIG. 1
		US-1,894,025	01/10/1933	Dennison et al.	
		US-3,895,446	07/22/1975	Orlov et al	RECEIVED
		US-4,084,875	04/18/1978	Yamamoto	
		US-4,213,146	07/15/1980	Maiman	JUN 1 7 2003
		US-4,463,310	07/31/1984	Whitley	AND TOTAL
		US-4,521,807	06/04/1985	Werson	
-		US-4,603,487	08/05/1986	Matsunata	technology Center 26
		US-4,638,471	01/20/1987	van Rosmalen	
		US-4,677,473	06/30/1987	Okamoto	
		US-4,714,830	12/22/1987	Usui	
		US-4,731,855	03/15/1988	Suda et al.	
		US-4,774,768	10/04/1988	Chiponis	
		US-4,776,102	10/11/1988	Carroll	
-1-/-		US-4,776,103	10/11/1988	Cote	
4/2		US-4,821,157	04/11/1989	Birk et al.	
See	·	US-4,825,394	04/25/1989	Beamish et al.	

			FOREI	GN PATENT DOCL	JMENTS		_
Exa	iminer als*	Cite No.	Foreign Patent Document Country Code ³ - Number ⁴ - Kind Code ⁵ (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	7°
کے	CC		WO9112489	08/22/1991	ABOS AUTOMATION		\Box
 			WO9207250	04/30/1992	ABOS AUTOMATION		
	\		WO97/44634	11/27/1997	KOMATSU LTD.		x
			JP9304030(ABSTRACT)	11/28/1997	KOMATSU LTD.		x

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Substitute for	or form 1449A	VPTO		Complete	e if Known	
				Application Number	09/844626	
INFO	RMATION	N DISCLO	SURE	Filing Date	4/27/2001	
STATEMENT BY APPLICANT			CANT	First Named Inventor	BEATY et al.	
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			U.S. PATE	ENT DOCUMENTS	
Examiner	Cite	Document Number	Publication Date	Name of Patentae or	Pages, Columns, Lines, Where
initials*	No.	o. Number - Kind Code ² (if known)		Applicant of Cited Document	Relevant Pessages or Relevant Figures Appear
حبح		US-4,849,743	07/18/1989	Ohno	
		US-4,886,958	12/12/1989	Merryman et al.	
		US-4,943,722	07/24/1990	Breton et al.	
		US-4,973,948	11/27/1990	Roberts	DECENTO
		US-5,032,924	07/16/1991	Brown et al.	RECEIVED
		US-5,048,904	09/17/1991	Montagu	
		US-5,058,178	10/15/1991	Ray	JUN 1 7 2003
		US-5,095,447	03/10/1992	Manns et al.	7011 = 7 2000
		US-5,113,581	05/19/1992	Hidese	echnology Center 260
		US-5,114,229	05/19/1992	Hideshima	- recommondy center 200
		US-5,133,601	07/28/1992	Cohen et al.	
		US-5,140,643	08/18/1992	Izumi et al.	
		US-5,163,232	11/17/1992	Gonzales, Jr. et al.	
1		US-5,173,796	12/22/1992	Palm et al.	
		US-5,204,734	04/20/1993	Cohen et al.	
		US-5,208,463	05/04/1993	Honma et al.	
		US-5,245,671	09/14/1993	Kobayashi et al.	
1/		US-5,276,546	01/04/1994	Palm et al.	
(1/		US-5,307,149	04/26/1994	Palm et al.	
		US- 5,355,221	10/11/1994	Cohen et al.	

		FOREIG	ON PATENT DOC	UMENTS		
Examiner Initials*	Cite No.	Foreign Patent Document Country Code ³ - Number ⁴ - Kind Code ⁵ (if known)	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T
sce	<u> </u>	JP10104033(ABSTRACT)	04/24/1998	KOMATSU LTD.		†,
	ļ	JP10221066(ABSTRACT)	08/21/1998	KOMATSU LTD.		Τ,
		JP10227623(ABSTRACT)	08/25/1998	KOMATSU LTD.		T,
(/		JP10232114	09/02/1998	KOMATSU LTD.		
		JP10267621(ABSTRACT)	10/09/1998	KOMATSU LTD.		,
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			U.S. PATE	NT DOCUMENTS	
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SX		US-5,420,689	05/30/1995	Siu	
		US-5,420,691	05/30/1995	Kawaguchi	
		US-5,430,548	07/04/1995	Hiroi et al.	
		US-5,452,080	09/19/1995	Tomiya	
		US-5,465,152	11/07/1995	Bilodeau et al.	
		US-5,546,189	08/13/1996	Svetkoff et al.	
		US-5,550,763	08/27/1996	Michael et al.	RECEIVED
		US-5,563,702	10/08/1996	Emery et al.	TILOLIVED
		US-5,563,703	10/08/1996	Lebeau et al.	1111 1 - 2002
		US-5,574,668	11/12/1996	Beaty	JUN 1 7 2003
		US-5,581,632	12/03/1996	Koljonen	
		US-5,592,562	01/07/1997	Rooks	Technology Center 2600
		US-5,600,150	02/04/1997	Stem et al.	
		US-5,617,209	04/01/1997	Svetkoff et al.	
		US-5,621,530	04/15/1997	Marrable, Jr.	
-		US-5,648,853	07/15/1997	Stern et al.	
		US-5,652,658	07/29/1997	Jackson et al.	
		US-5,654,800	08/05/1997	Svetkoff et al.	
	I	US-5,692,070	11/25/1997	Kobayashi	
		US-5,734,475	03/31/1998	Pai	

FOREIGN PATENT DOCUMENTS									
Examiner Initials*	Cite No.1	Foreign Patent Document Country Code ³ - Number ⁴ - Kind Code ³ (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	7			
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36		US-5,761,337	06/02/1998	Nishimura et al.				
		US-5,801,966	09/01/1998	Ohashi				
		US-5,812,268	09/22/1998	Jackson et al.				
		US-5,812,269	09/22/1998	Svetkoff et al.				
		US-5,815,275	09/29/1998	Svetkoff et al.				
1		US-5,818,061	10/06/1998	Stern et al.	RECEIVED			
		US-5,859.698	01/12/1999	Chau et al.	MEGETALD			
		US- 5,859,924	01/12/1999	Liu et al.	4 : 2003			
		US-5,870,489	02/09/1999	Yamazaki et al.	JUN 1 7 2003			
V		US-5,943.125	08/24/1999	King et al.				
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